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CENTER
A JOLLA,
LIFORNIA

FEBRUARY 1974, No. 2

FISHING INFORMATION

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

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U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
SOUTHWEST FISHERIES CENTER
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LA JOLLA, CALIFORNIA 92037

FISHING INFORMATION

FEBRUARY 1974, No. 2

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R. Shomura, Director, Honolulu Laboratory

PREFACE

This publication, Fishing Information, appears monthly and contains 1) fishery advisory information, 2) a narrative description of pertinent surface temperature conditions, 3) a narrative description of subsurface temperature structure for parts of the North Pacific, 4) charts of winds and pressures for the eastern North Pacific, 5) charts of sea surface temperature for the North Pacific and eastern tropical Pacific, and 6) charts of subsurface temperature structure in the eastern North Pacific.

A supplement to Fishing Information appears at 15-day intervals throughout the year. This is a chart of sea surface temperature (contoured at 2°F (1°C) intervals) from Baja California to Vancouver Island out to about 135°W. Special bulletins are published in conjunction with the 15-day sea surface temperature charts which include short-term projections of albacore distribution and locations of productive fishing areas, information on oceanographic and atmospheric conditions, and other information as is appropriate during the albacore fishing season.

L. E. Eber, Leader
Fishery Information Systems
Southwest Fisheries Center
La Jolla, California

Submitted for publication - March 21, 1974

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ENVIRONMENTAL CHARTS ANALYZED BY:
L. Eber (Figures 4 and 6), F. Miller (Figures 9 and 10)
J. Renner (Figures 1, 2, 3, 5, 7, and 8), J.F.T. Saur (Figures 11 and 12)

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Pacific Environment Institute, Fisheries Research Board of Canada, West Vancouver, British Columbia, by L.F. Giovando from observations by S.G. Westhaver at Langara Island Light; D.L. Kupillas at Cape St. James Light; J. Coldwell at Kains Island Lightstation; O.A. Edwards at Amphitrite Point Light
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Expendable bathythermograph observations are made by the mates of the S.S. Hawaiian Enterprise of Matson Navigation Co. The data are processed under supervision of Dr. D.R. McLain at the NMFS Pacific Environmental Group, Monterey, using computer facilities of the Fleet Numerical Weather Center. The project is partially supported by the National Science Foundation and the Office of Naval Research under Government Order NAonr-9-74.

Sea Surface Temperature and Environmental Conditions

L. EBER AND F. MILLER

Eastern North Pacific

A tendency toward slightly warmer sea surface temperature conditions in the southwest section of the eastern north Pacific continued in February 1974. Departures from normal in this section were positive, exceeding 2° F (1.1° C) in only a few scattered patches (Figure 5). Temperature conditions in the Gulf of Alaska and from the west coast out to 140° W were generally cooler than normal, with negative departures of 2° F (1.1° C) or more along much of the coast.

Atmospheric pressures in February 1974 were 4-6 millibars above normal between latitudes 30° and 40° N, and below normal in the Gulf of Alaska. The circulation pattern was characterized by anticyclonic flow, centered variously from 130° -140° W off California and cyclonic flow centered in the Gulf of Alaska. Except for the last week of the month, cyclonic activity also was observed south of the Aleutian Island in the vicinity of 180° longitude. Consequently, southwest winds prevailed over much of the intervening region, south of 45° N and west of 140° W, where relatively warmer sea surface temperatures occurred.

Western North Pacific

The pattern of anomalous temperatures in the western North Pacific has changed only slightly since January 1974. The large area of negative departures from normal extending to the south and east of Japan has become somewhat larger while the negative departures found during the two preceeding months off southeast Kamchatka and the Kuril Islands became positive (Figure 6). Sea surface temperatures over other portions of the western North Pacific were mostly above normal. Positive departures exceeded 2° F (1.1° C) in a few scattered areas, of which the largest was located 40°-45° N, between longitudes 165° and 175° E.

Eastern Tropical Pacific

During February the sea surface temperatures usually increase from 1° -3° F between 30° S and 10° N over most of the eastern tropical Pacific. Between 10° N and 30°N temperature decreased, but reductions were small compared to earlier winter months.

In February 1974, the pattern of cooling and warming was as expected (Figure 9). Over most of the tropical and subtropical southern hemisphere surface temperatures increased and the temperature anomalies (Figure 10) were similar to those in January 1974. Along the coast of South America northward to 5° S and along the equator between 5° N and 5° S surface winds and cloud cover were near normal. Most of the excess cooling which produced negative anomalies in the equatorial area occurred between August and November 1973.

It appears that sea surface temperatures are slowly returning to normal in the eastern Tropical Pacific. In a triangular area between Panama, Ecuador and the Galapagos Islands temperatures are slightly above normal as a result of a higher frequency of northerly winds and less cloud cover than is usually expected. In the area between 10° S and 5° S from 85° -105° N surface winds have been near the long-term mean of 10-12 knots; but, low stratus cloud cover has been significantly below normal. In this warm area, a southern hemisphere zone of convergence (ITCZ) shows up with considerable weather activity in the NOAA-2 satellite mosaics after mid-February.

The northward extension of negative anomalies from the equator is about 8° N centered around 100° W and 140° W (Figure 10) was associated with surface mixing by persistent easterly trades which were 5-10 knots above normal during the month. The warming between 5° N and 15° N east of 130° W occurred where surface winds were near normal but cloud cover was below normal. The cold water and negative anomalies along to the west and south of Baja California represent almost no change from January 1974. These cold waters reflect a south-and-westward extension of the California Current.

Subsurface Temperature Structure in the Northeast Pacific Ocean

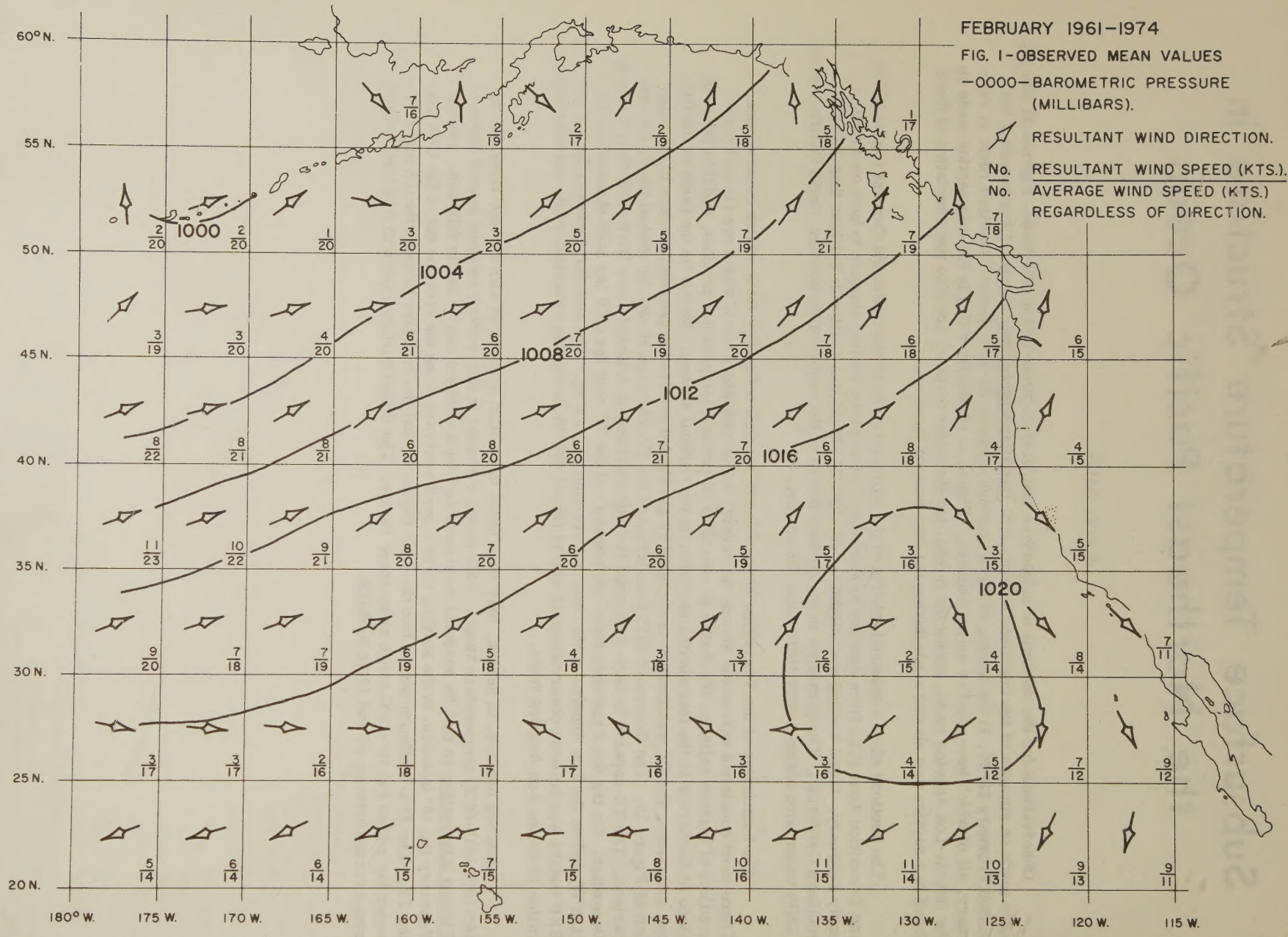
J.F.T. SAUR

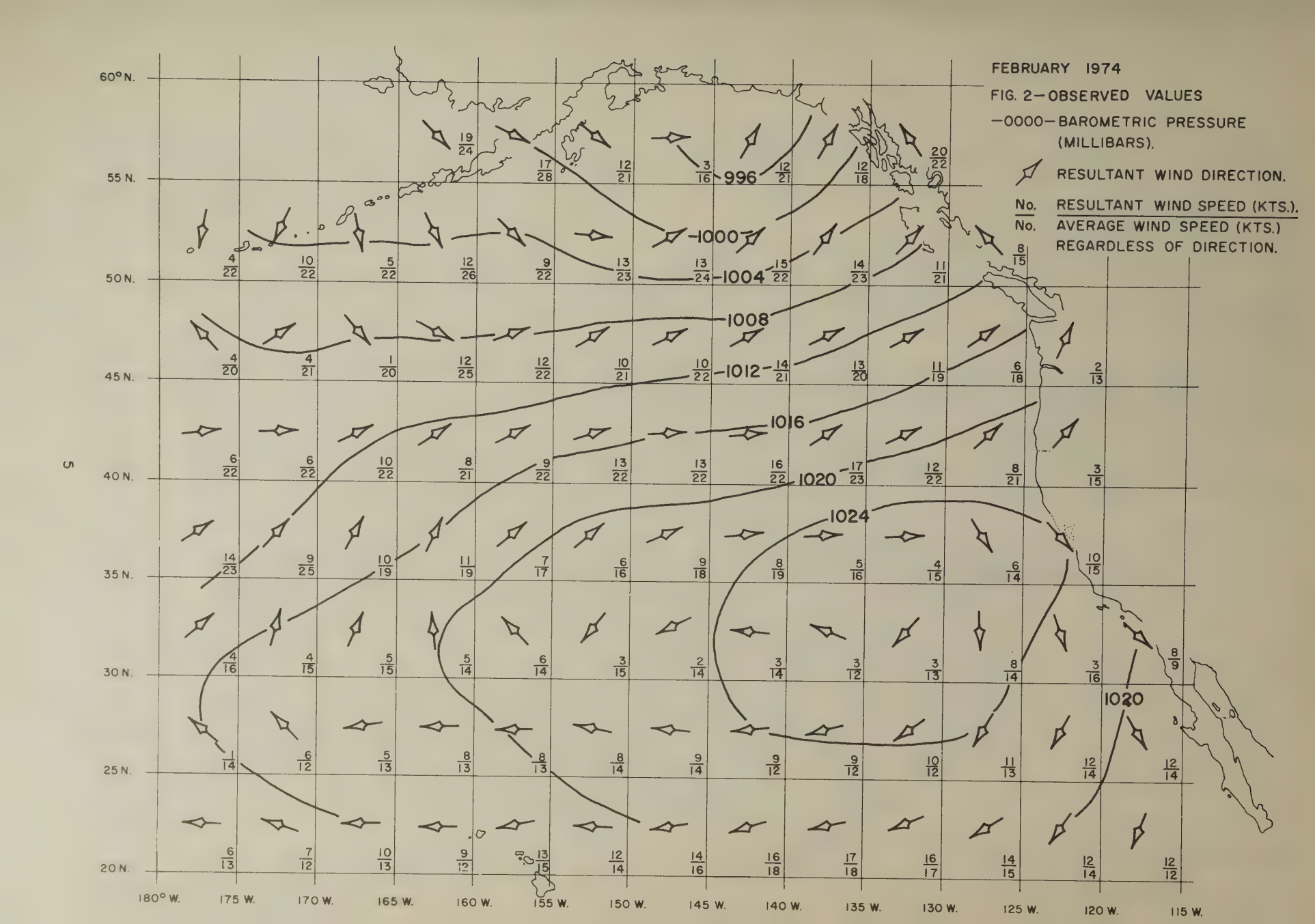
Observations for the sections of subsurface temperature presented in this issue, Figures 11 and 12, were made on voyages of the container vessel, S.S. Hawaiian Enterprise. Figure 11 representing the period February 22-26, is the latest, of three sections made on the Hawaii-San Francisco route in February, all of which have similar major features. Figure 12 (February 8-12) is the only section made on the Hawaii-Los Angeles route, during the month, but its major features are also representative of those found in a section (not shown) made during the last week of January.

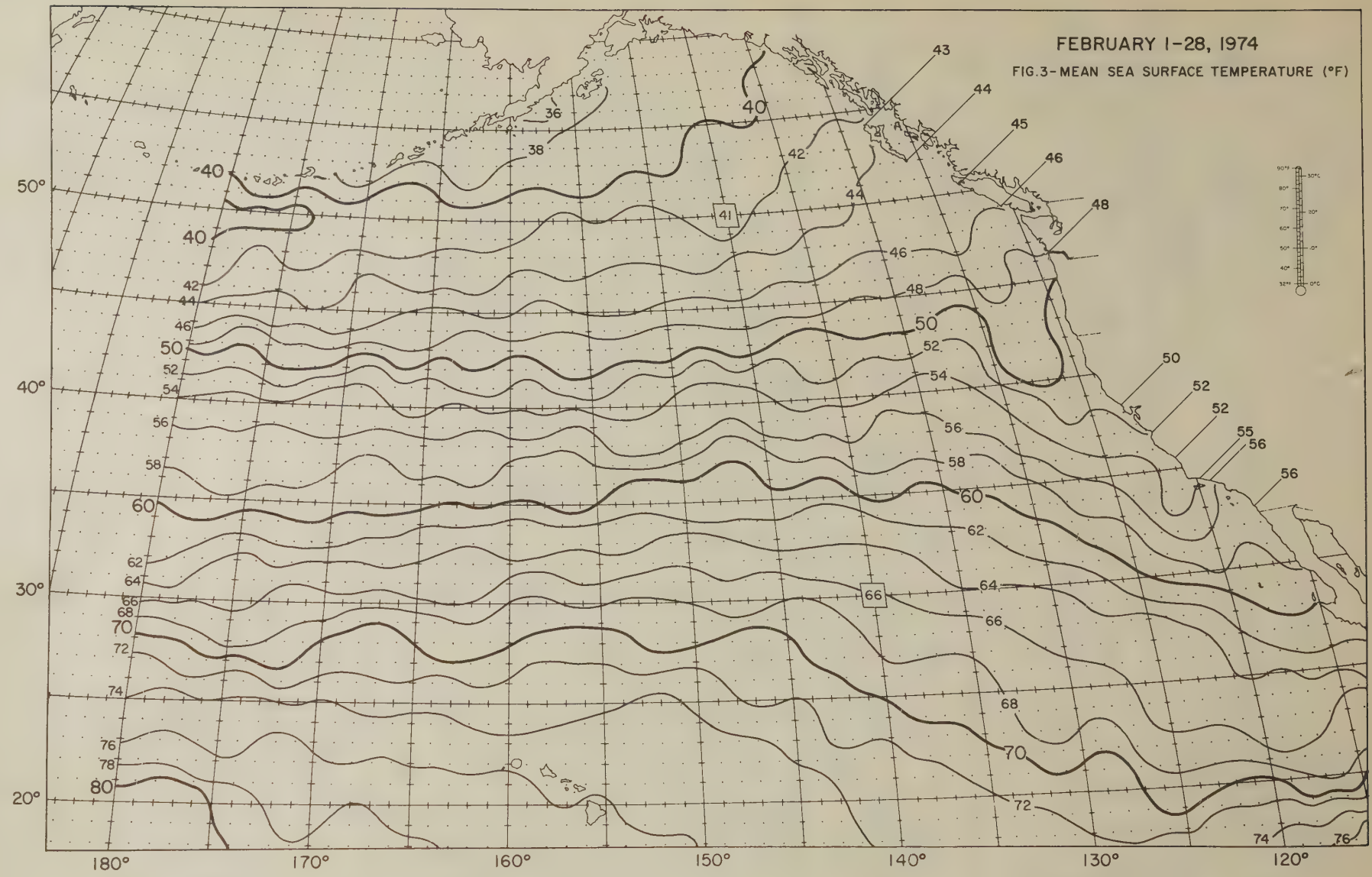
The sections show a seasonal cooling of the surface layers in the California Current region (CCR) and Transition Zone (TZ) from January to February. Most of the cooling appears to have occurred in early February. Total cooling was slightly over 1°C(2°F) off central California but less than 1°C off southern California. Temperatures in the surface layers of the region of the Eastern North Pacific Central (ENP) water have changed very little since December.

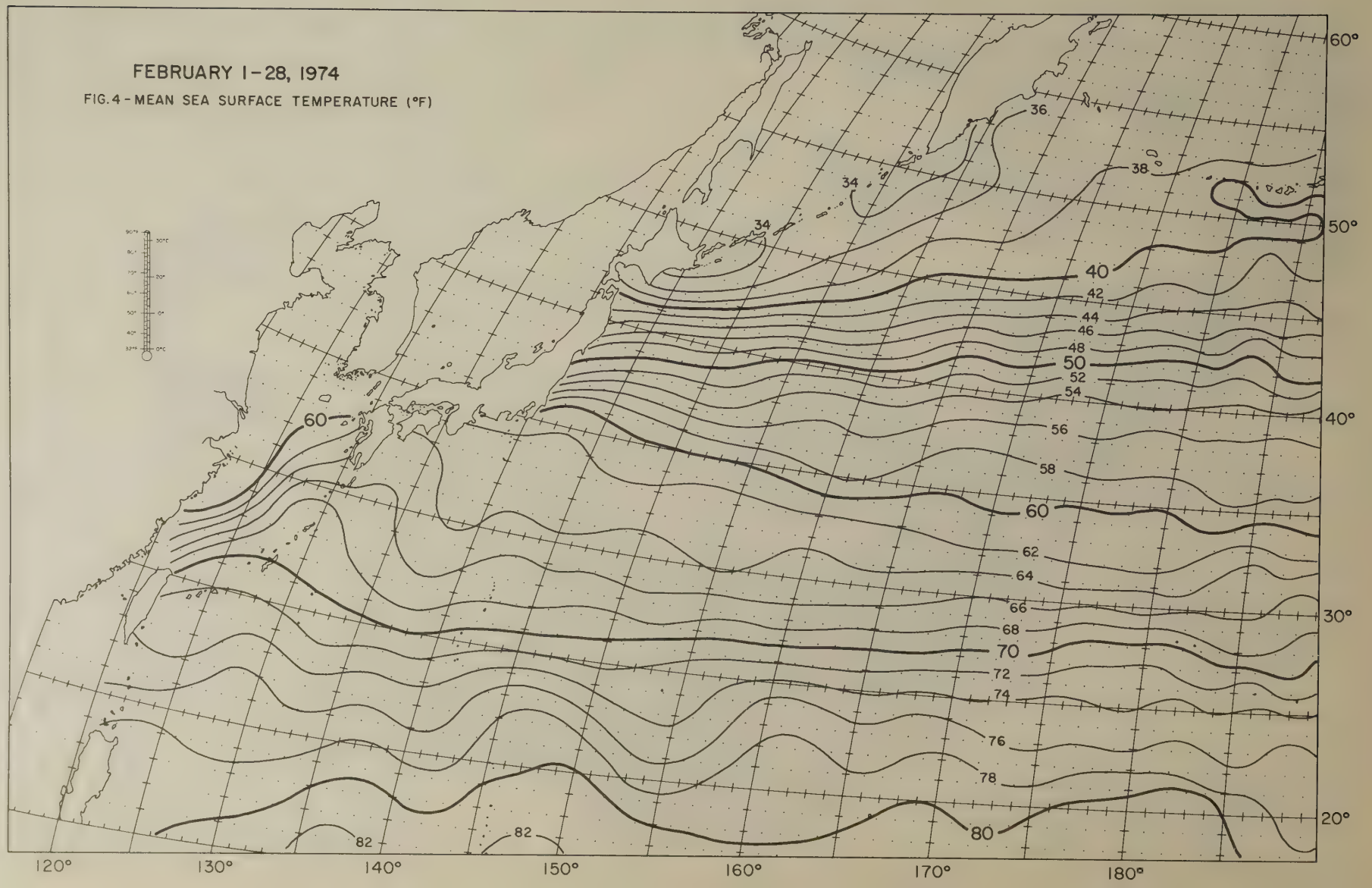
The boundaries of the Transition Zone (TZ) are not well defined by these winter observations. There is no consistent agreement among the several major indicators used, which are (1) horizontal gradient of surface salinity, (2) change in character of vertical temperature profiles, and (3) change in slope of isotherms in the thermocline as shown by the vertical section. Mainly on the basis of the first two indicators, the TZ was located as depicted by the shaded area in the geographic chart in the upper left of Figure 12. The December 1973 boundaries of the TZ are also shown, by dashed lines, for comparison. The TZ appears to have decreased in width and become oriented more WNW-ESE than it was in December. On the San Francisco route the boundary of the TZ with the CCR lay near observation 17 (133°W) and on the Los Angeles route, near observation 20 (128°W). The boundary between the TZ and ENP waters was between observations 13 and 14 (about 139°W) on the San Francisco route and near observation 16 on the Los Angeles route.

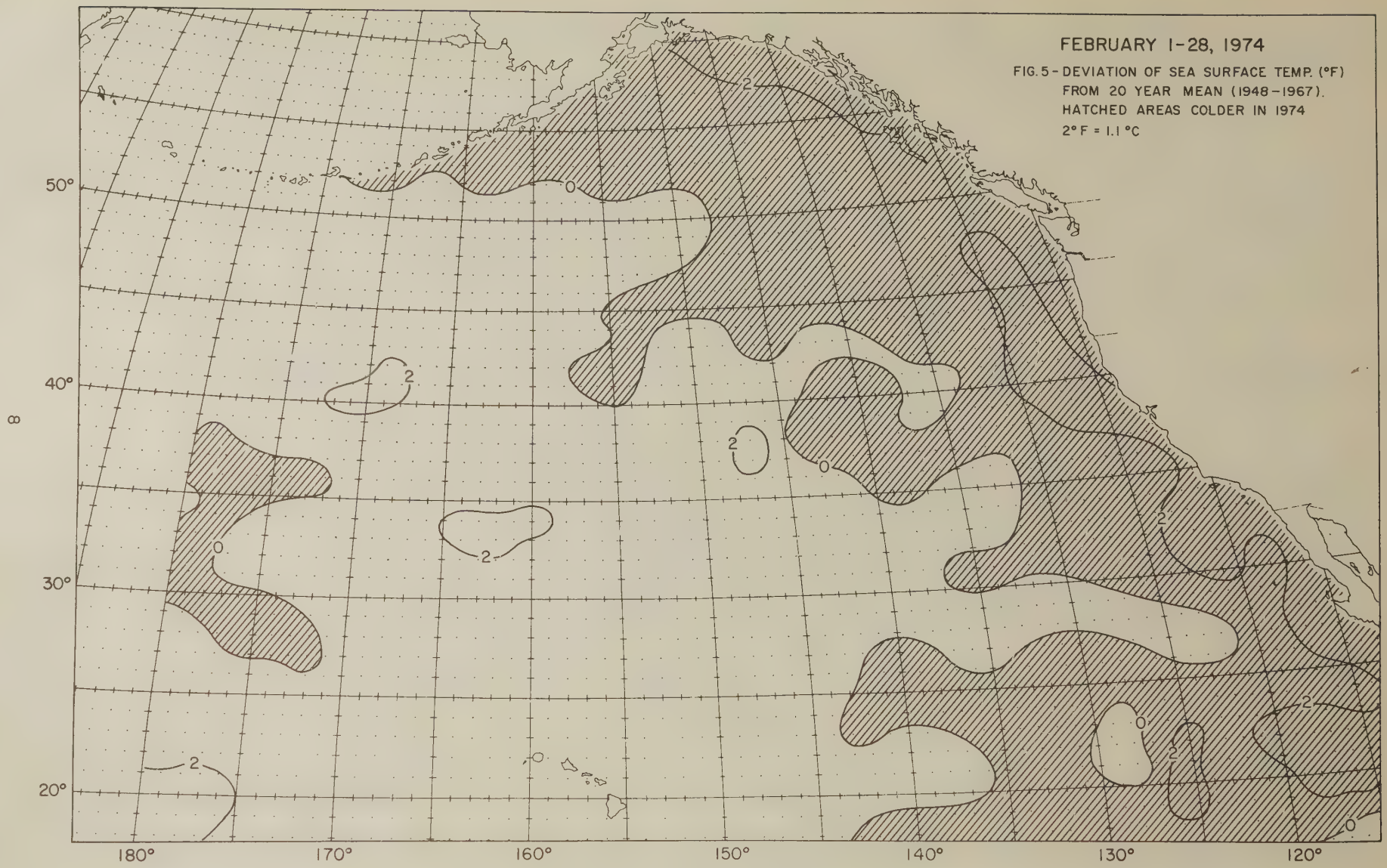
Albacore catches, in season, have been found to be often associated with surface layers in the 16°-19°C (61°-66°F) temperature range. This range is shaded in the vertical sections in each issue of Fishing Information so that its seasonal movement and depth changes can be easily followed. During February the 16° isotherm in the surface layer moved westward along the sections out of the CCR into the TZ. The 19°C isotherm moved into the ENP region so that the boundary between the TZ and ENP water lay within the 16°-19°C range along these routes. The mixed surface layers in this temperature range varied between 80 and 120m in depth.

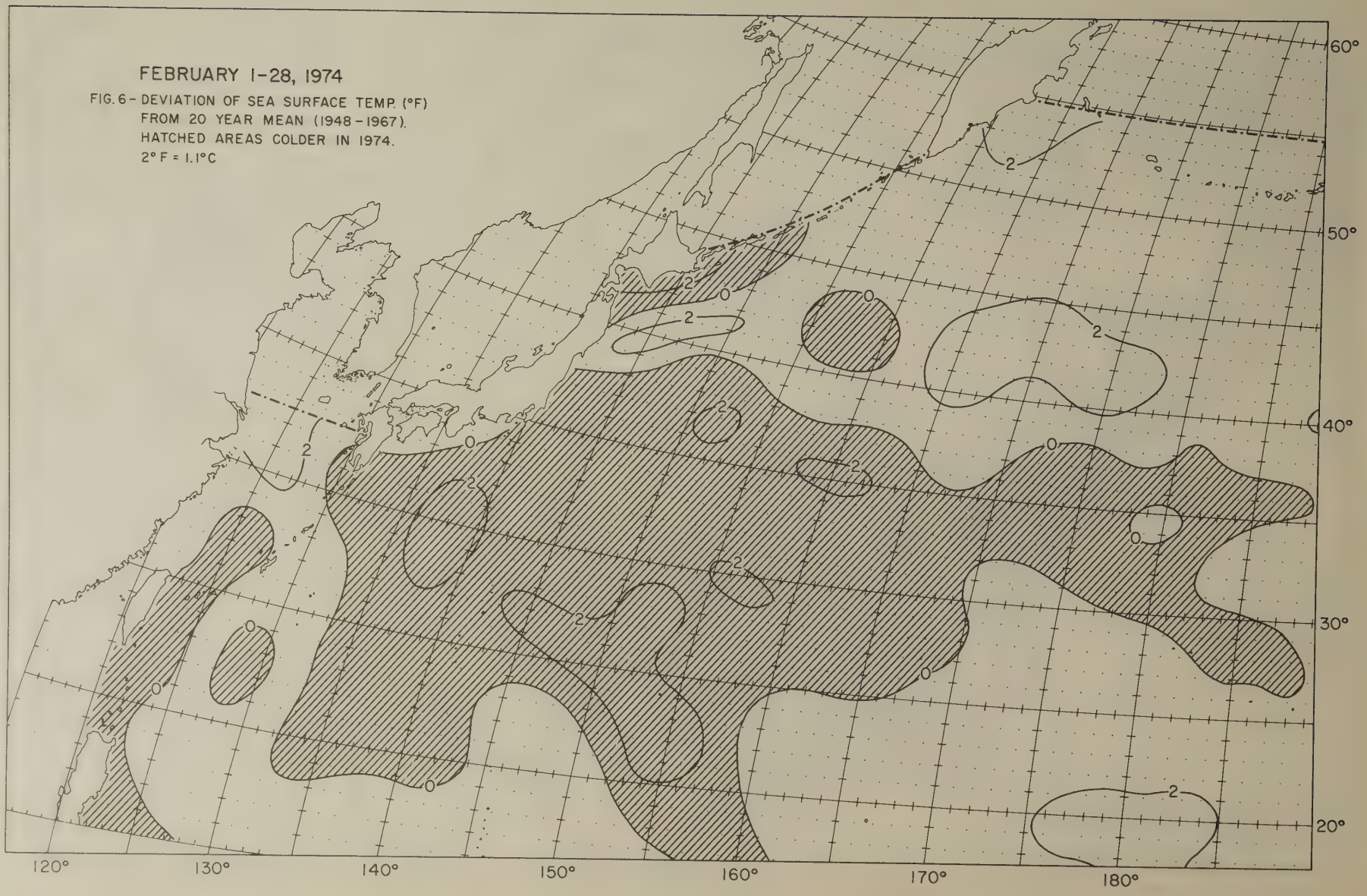

FEBRUARY 1961–1974
FIG. 1 – OBSERVED MEAN VALUES
–0000– BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1000
1004
1008
1012
1016
1020
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

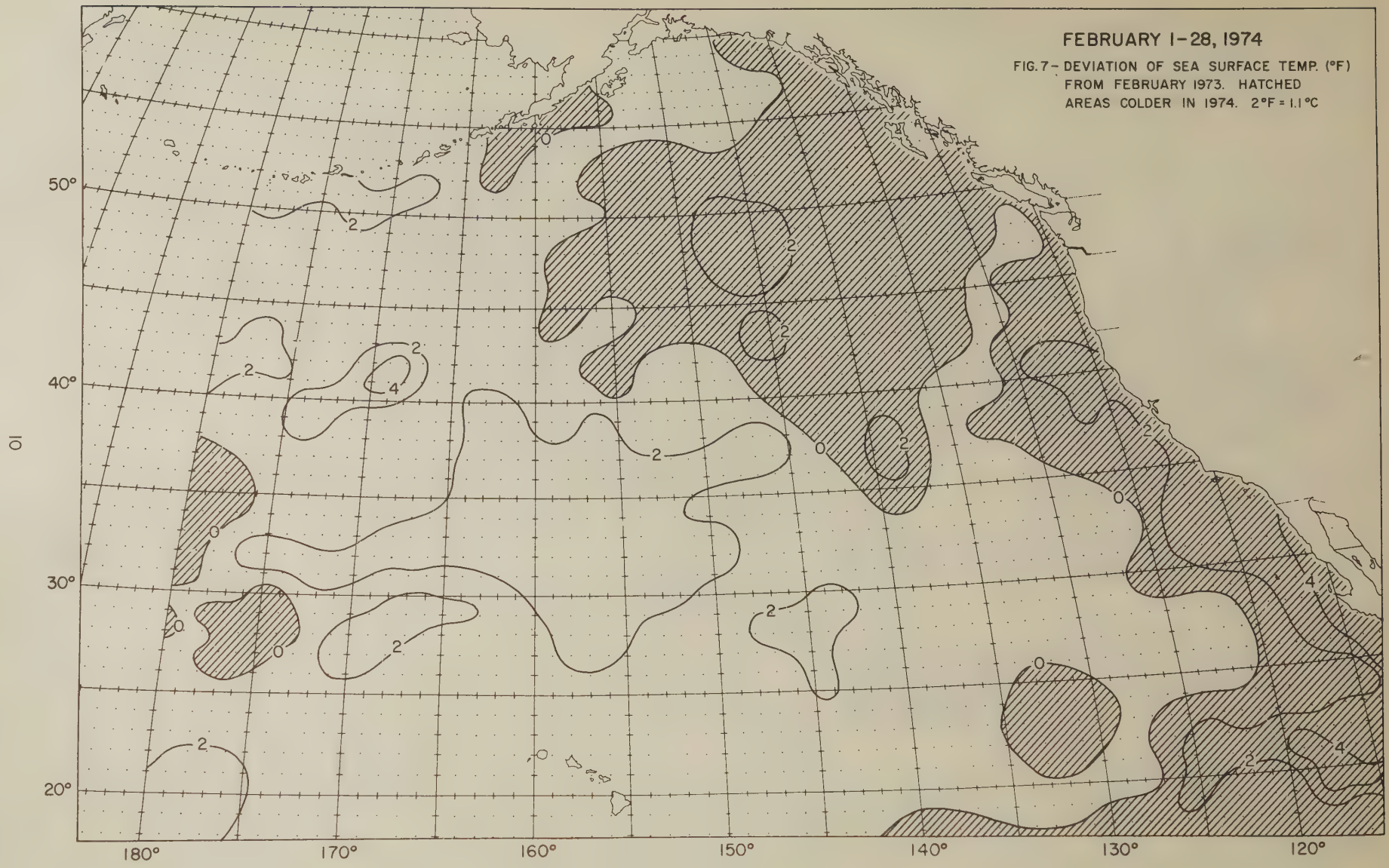

FEBRUARY 1974
FIG. 2—OBSERVED VALUES
—0000—BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
996
1000
1004
1008
1012
1016
1020
1024
1020
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

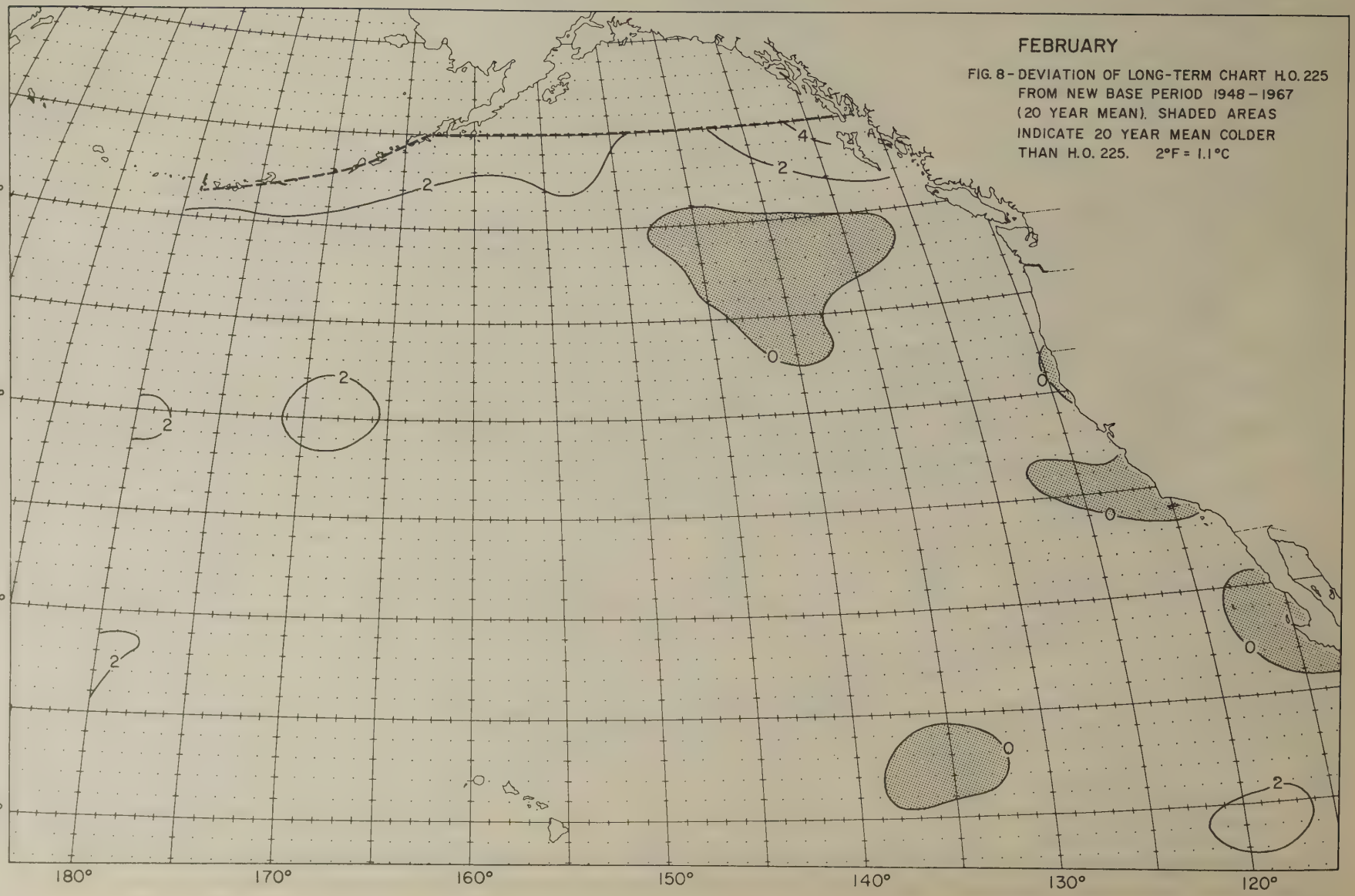

FEBRUARY 1-28, 1974
FIG.3-MEAN SEA SURFACE TEMPERATURE (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

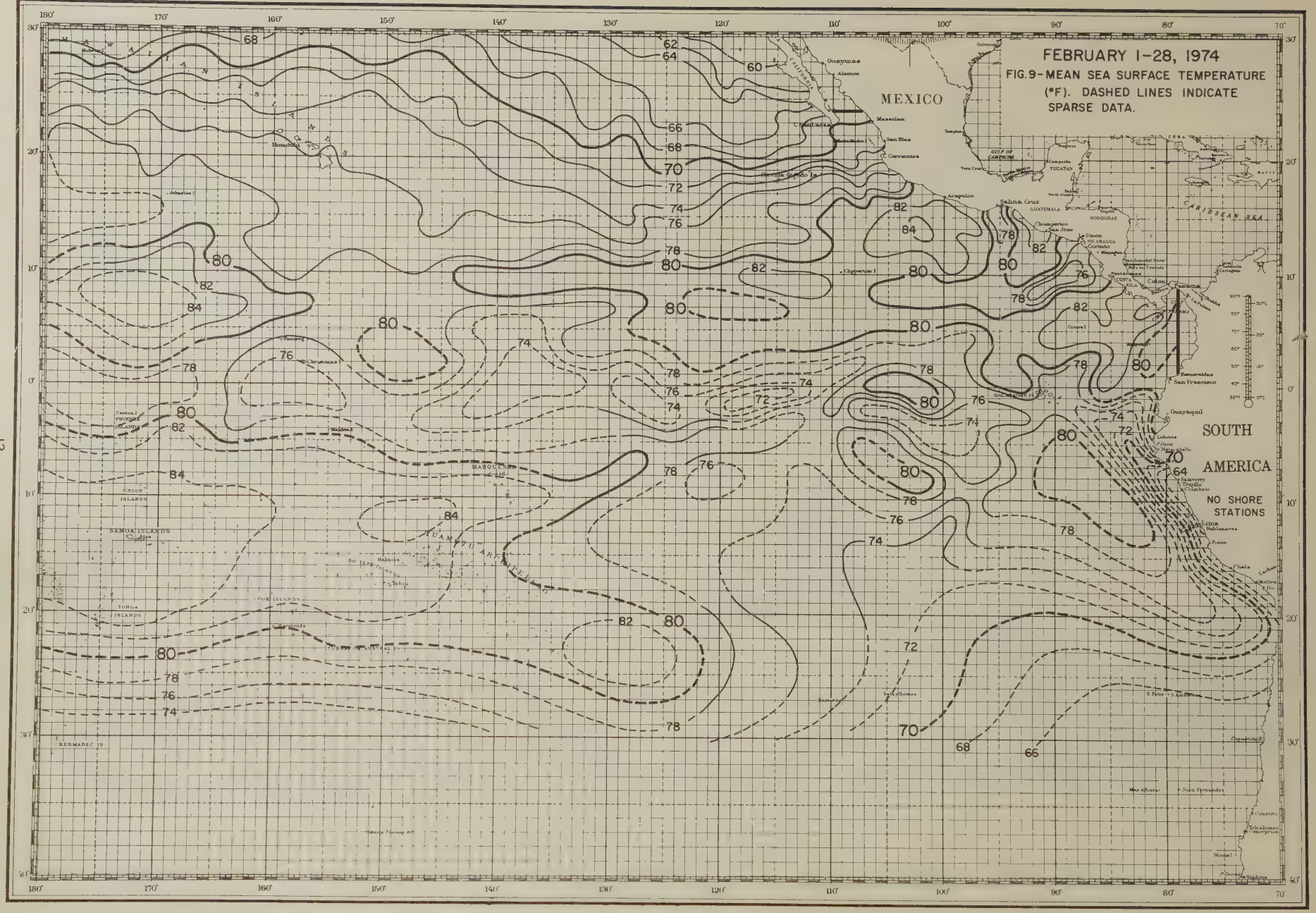

FEBRUARY 1-28, 1974
FIG. 4 - MEAN SEA SURFACE TEMPERATURE (°F)
34
36
38
40
42
44
46
48
50
52
54
56
58
60
62
64
66
68
70
72
74
76
78
80
82
82
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°


FEBRUARY 1-28, 1974
FIG. 5 - DEVIATION OF SEA SURFACE TEMP. (°F) FROM 20 YEAR MEAN (1948-1967). HATCHED AREAS COLDER IN 1974
2° F = 1.1 °C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2


FEBRUARY 1-28, 1974
FIG. 6 - DEVIATION OF SEA SURFACE TEMP. (°F)
FROM 20 YEAR MEAN (1948 - 1967).
HATCHED AREAS COLDER IN 1974.
2° F = 1.1°C
60°
50°
40°
30°
20°
120°
130°
140°
150°
160°
170°
180°
2
0


FEBRUARY 1-28, 1974
FIG. 7 - DEVIATION OF SEA SURFACE TEMP. (°F) FROM FEBRUARY 1973. HATCHED AREAS COLDER IN 1974. 2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


FEBRUARY
FIG. 8 - DEVIATION OF LONG-TERM CHART H.O. 225 FROM NEW BASE PERIOD 1948 – 1967 (20 YEAR MEAN). SHADED AREAS INDICATE 20 YEAR MEAN COLDER THAN H.O. 225. 2°F = 1.1°C
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
4
2
2
2
2
2
2
0
0
0
0
0
0
2


FEBRUARY 1-28, 1974
FIG. 9-MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
NO SHORE STATIONS
HAWAIIAN ISLANDS
SAMOA ISLANDS
TONGA ISLANDS
CARIBBEAN SEA
GUATEMALA
HONDURAS
COSTA RICA
PANAMA
COLOMBIA
ECUADOR
PERU
CHILE
GALAPAGOS IS.
MARQUESAS
TUAMOTU ARCHIPELAGO
KERMADEC IS.
PHOENIX ISLANDS
UNION ISLANDS
COOK ISLANDS
Acapulco
Salina Cruz
Champerico
San Jose
Corinto
Balboa
Colon
Panama
Esmeraldas
San Francisco
Guayaquil
Salaverry
Trujillo
Chimbote
Lobitos
Talara
Callao
Pisco
Chala
Mollendo
Arica
Iquique
Juan Fernandez
Mas Afuera
Talcahuano
Concepcion
Valparaiso
Honolulu
Tahiti
Samoa
Fanning
Christmas
Canton I.
Malden I.
Johnston I.
Howland I.
Baker I.
Jarvis I.
Palmyra
Hawaii
Nihoa
Necker I.
French Frigate Shoals
Gardner Pinnacles
Maro Reef
Laysan I.
Lisianski I.
Pearl and Hermes Reef
Midway Is.
Kure I.
Necker I.
Nihoa

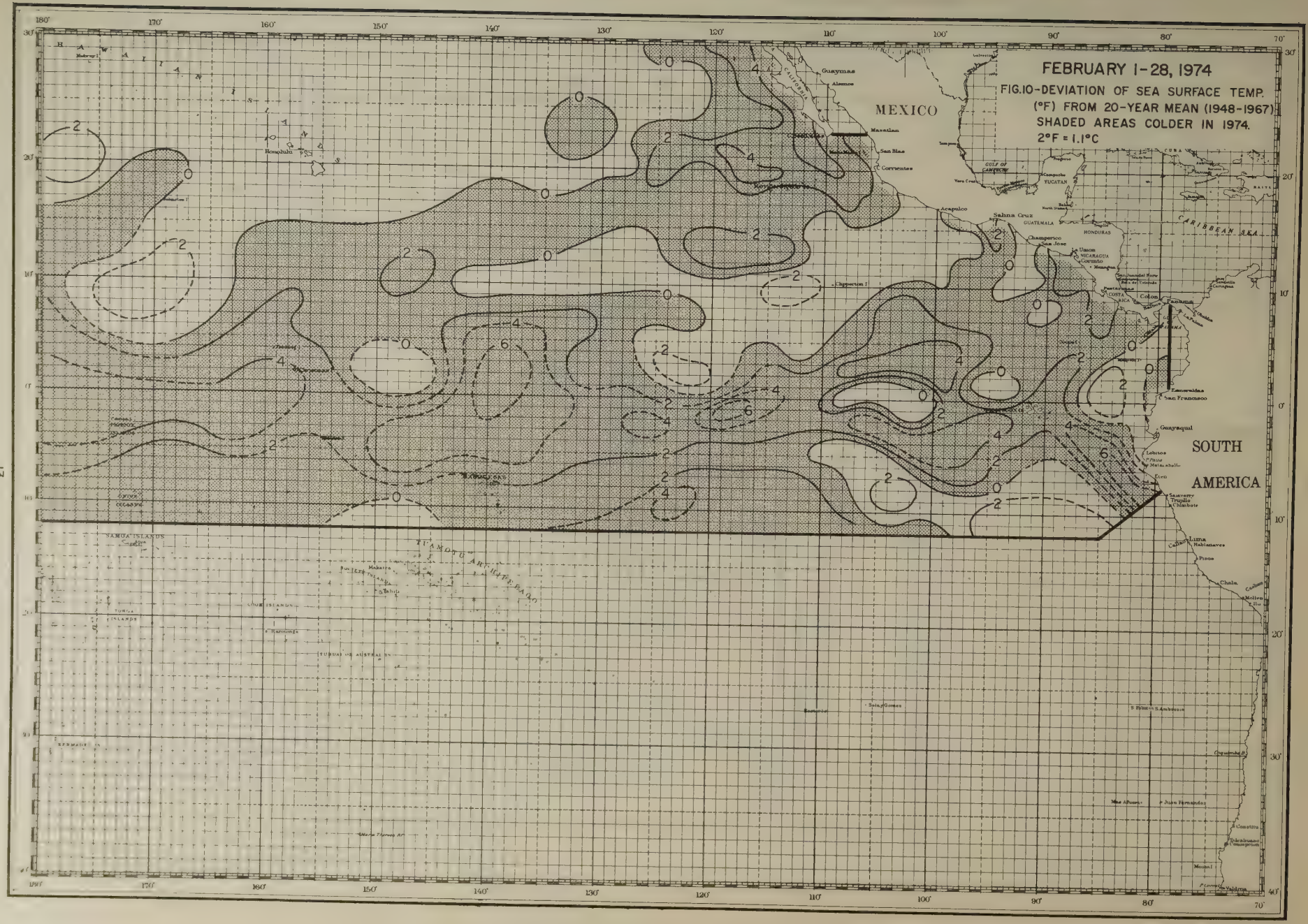
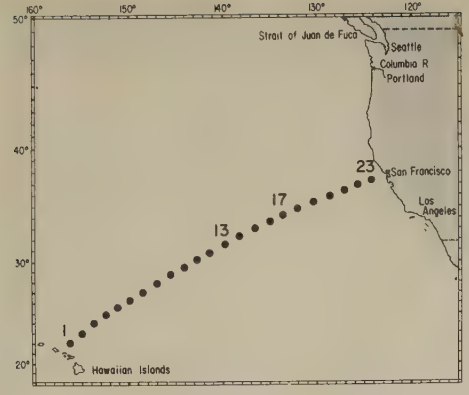
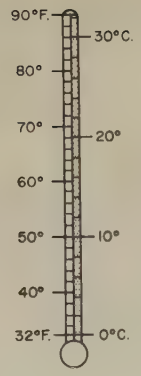

FEBRUARY 1-28, 1974
FIG.10-DEVIATION OF SEA SURFACE TEMP. (°F) FROM 20-YEAR MEAN (1948-1967) SHADED AREAS COLDER IN 1974.
2°F = 1.1°C
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GUATEMALA
HONDURAS
NICARAGUA
COSTA RICA
PANAMA
YUCATAN
CUBA
HAITI
Guaymas
Alamos
Mazatlan
San Blas
Corrientes
Acapulco
Salina Cruz
Champerico
Corinto
Colon
Panama
Esmeraldas
San Francisco
Guayaquil
Salaverry
Trujillo
Chimbote
Lima
Callao
Pisco
Chala
Mollendo
Ilo
Arica
Iquique
Antofagasta
Coquimbo
Valparaiso
Mas Afuera
Juan Fernandez
Easter I.
Hawaiian Is.
Honolulu
Johnston I.
Palmyra I.
Christmas I.
Fanning I.
Samoa Islands
Tuamotu Archipelago
Tahiti
Marquesas Is.
Tuvalu
Gilbert Islands
Tonga Islands
Fiji Islands
Solomon Is.
Marshall Is.
Wake I.
Midway Is.
Guam
Ryukyu Is.
Japan
Kuril Is.
Aleutian Is.
Alaska
California
Gulf of California
Gulf of Mexico
Caribbean Sea
Panama Canal
Galapagos Is.
Peru Basin
Tuvalu Basin
Marquesas Basin
Tuamotu Basin
Chile Basin
Nazca Basin
Guatemala Basin
Costa Rica Basin
Panama Basin
Ecuador Basin
Peru Basin
Chile Basin
Nazca Basin
Tuvalu Basin
Marquesas Basin
Tuamotu Basin

FIGURE 11





HONOLULU – SAN FRANCISCO

FEBRUARY 22–26, 1974

SS HAWAIIAN ENTERPRISE

VOYAGE 84

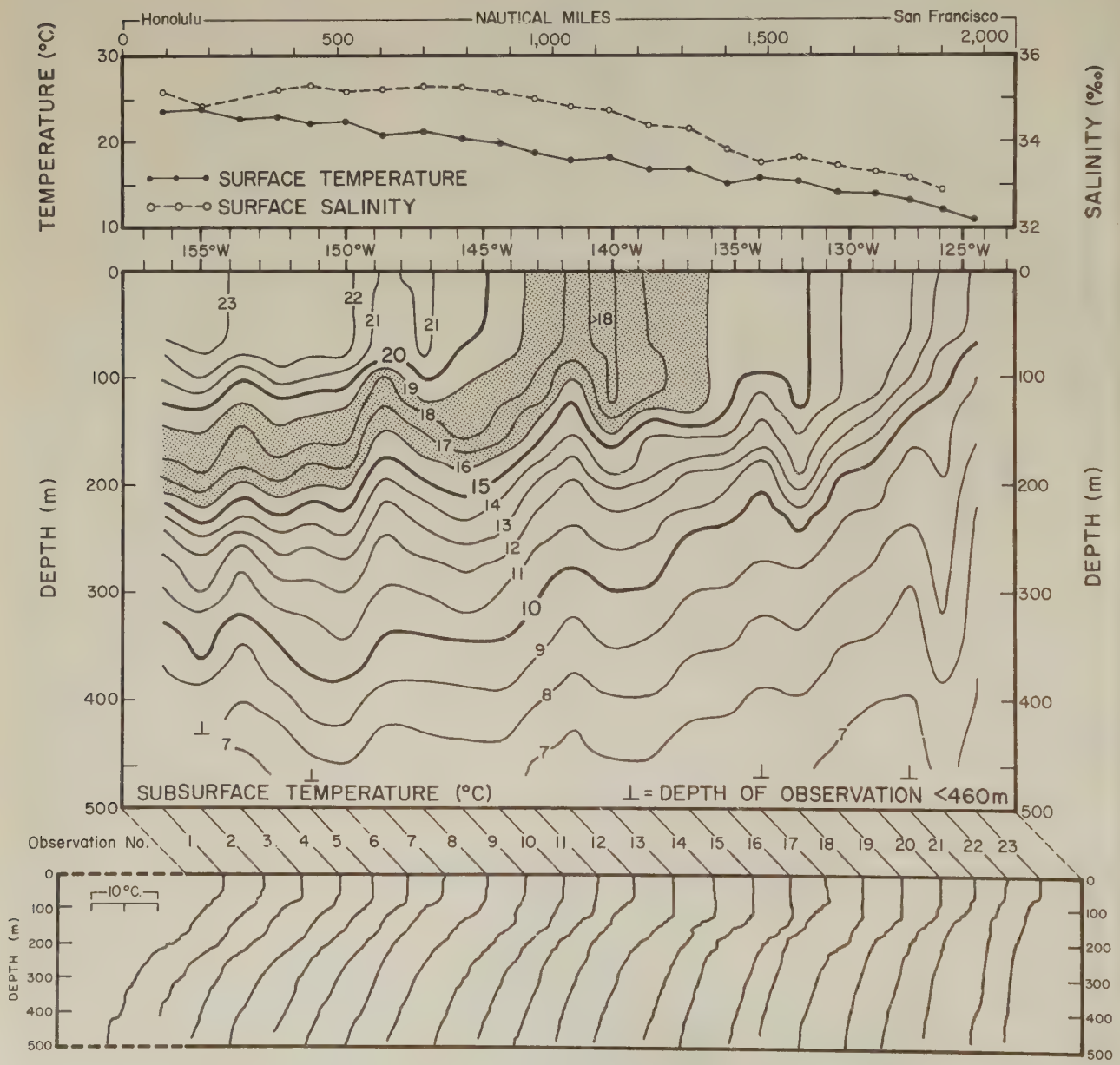
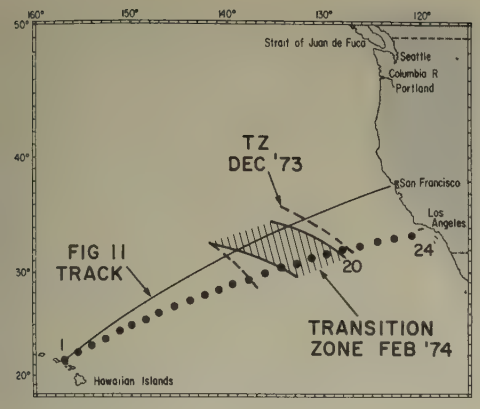
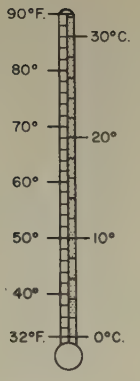


FIGURE 12



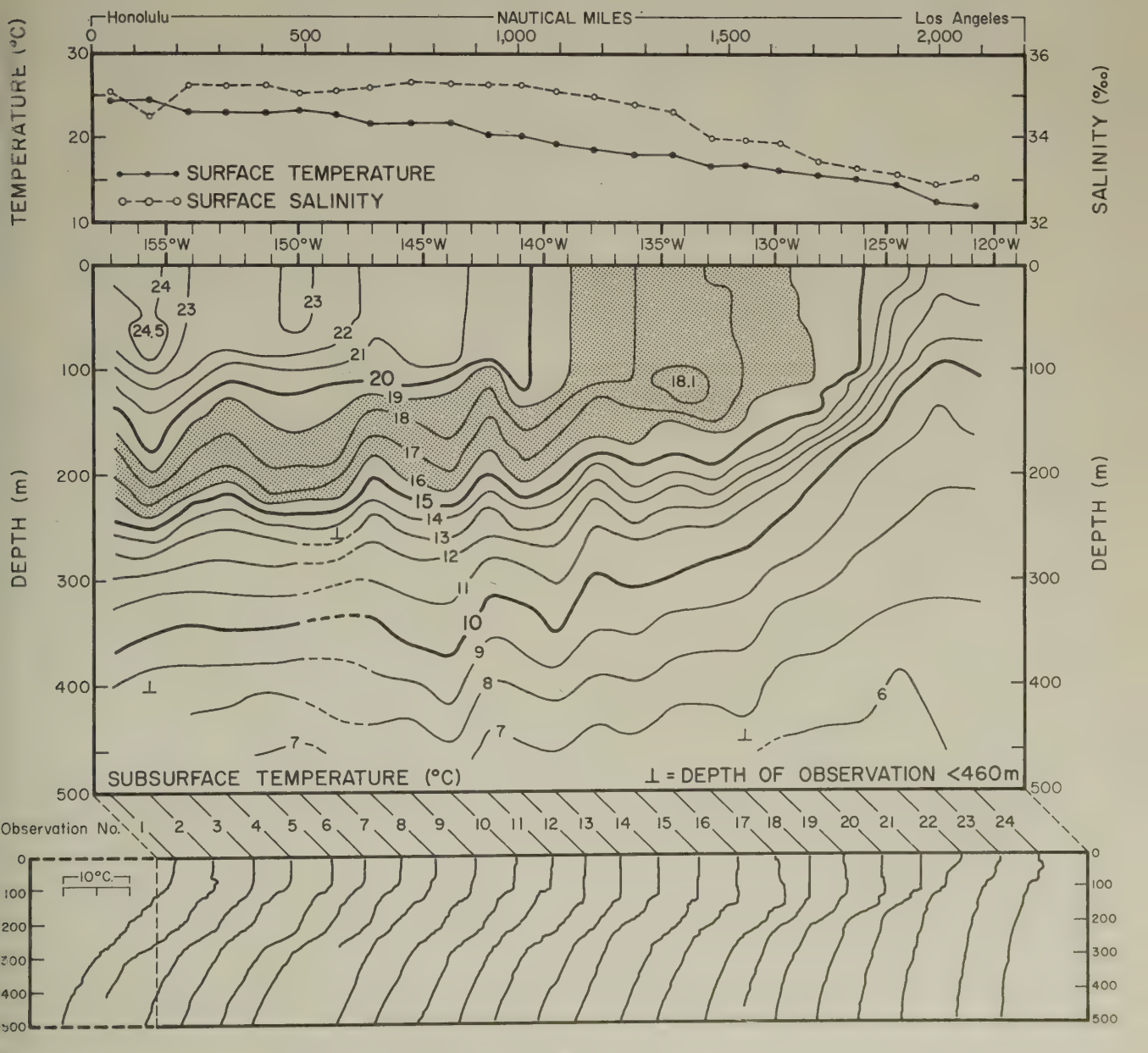


HONOLULU — LOS ANGELES

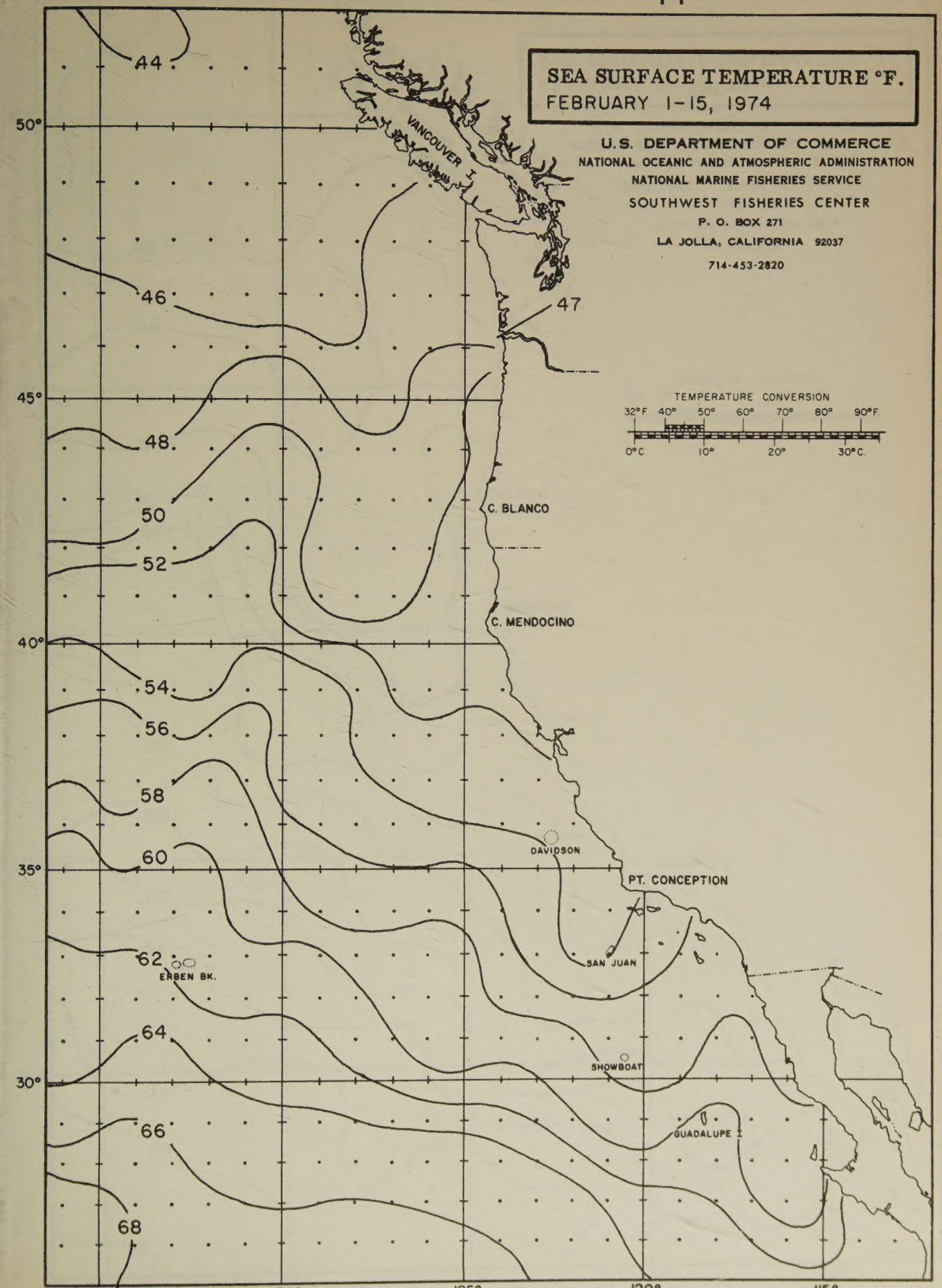
FEBRUARY 8-12, 1974

SS HAWAIIAN ENTERPRISE

VOYAGE 83



FISHING INFORMATION – supplement



FISHING INFORMATION – supplement